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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,426	07/03/2003	Vikram Devdas	CISCP816	5113

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EXAMINER	
TSEGAYE, SABA	

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,426	DEVDAS ET AL.	
	Examiner	Art Unit	
	Saba Tsegaye	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed on 10/21/05. Claims 1-25 are pending. Currently no claims are in condition for allowance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification fails to adequately describe transit encapsulated client data frames **without consideration of loss or corruption**. Applicant (argument, page 11) cited the portion of specification which is the last paragraph on page 12 and continuing on to page 13 of the applicants' specification describes "...any resulting loss and corruption of the transmitted data is handled by higher level network protocol". However, this paragraph contradicts with the claim limitation because if the retransmission replacement of lost frames is handled that means there is a consideration of loss or corruption of encapsulated client data frames.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 23 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "in transit from said local transport interface to said remote transport interface, including timing at said local port against a time limit to check **for loss** of GFP-encapsulated client data frames across the transport network" contradicts with the phrase (line 16) "transit encapsulated client data frames **without consideration of loss or corruption"**.

Claim Rejections - 35 USC § 103

6. Claims 1-4, 8-11 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US 2003/0074449) in view of Ghose et al. (US 2002/0004842).

Regarding claims 1, 8 and 17, Smith discloses, in Figs 3-5, a method for efficiently transmitting GFP-encapsulated client data frames from a local transport interface (NE1) and at least one local port (CX) associated therewith across a SONET/SDH transport network (120) to a remote transport interface (NE2) and at least one remote port (XC) associated therewith, the remote transport interface (NE2) having a buffer (226) for holing the GFP-encapsulated client data frames received across the SONET/SDH transport network (120).

Further, Smith discloses a buffer-to-buffer flow control that regulates traffic along a link between the transmitter port and the receiver port by controlling the rate at which the transmitter can send data to the receiver (claimed receiving information from the remote transport interface). The transmitter is able to transmit a frame along a link only if the receiver has indicated it can

accept the frame. The receiving port controls the transmission of frames by giving permission to the sending port to send one or more frame to that particular receiving port (claimed transmitting more GFP client data frames responsive to the information). Each port keeps track of the buffer credit count, which is initialized to zero. For **each frame transmitted**, the credit count is incremented by one, and **for each frame received**, the credit count is decreased (claimed tracking the number of GFP-encapsulated client data frames). Smith, further, discloses that the data packet protocol rules dictate that the number of packets in transit on the link cannot exceed the buffer credits assigned to the link. This ensures that the **buffer does not overflow** (0093) (claimed without consideration of loss or corruption of encapsulated client data frames so that the SONET/SDH transport network from the local transport interface to the remote transport interface is efficient utilized).

However, Smith does not disclose a flow control based on the number of bytes available in the remote transport interface buffer.

Ghose teaches buffer-to-buffer credits for implementing flow control based on the number of bytes received successfully (page 3, 0048) and tracking the number of bytes of GFP-encapsulated client data frames in transit from the local transport interface to the remote transport interface (0055). Further, Ghose teaches that credit also serve as an implicit acknowledgement of the correct receipt of the bytes transmitted using the prior credit values.

Furthermore, Ghose teaches that the preferred embodiment is to give credits for the transmission of each bytes with each credit measure corresponding to a single byte. Some obvious variations would be to use a different measure for the credits where each credit measure

corresponds to multiples or submultiples of bytes (0153). As known, GFP frame has the same fixed length, i.e., the same number of bytes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teaching from Ghose of a flow control based on the number of bytes to the frame based protocol networks disclosed by Smith in order to provide flexible, fast and reliable byte stream transport system with very low end-to-end latency.

Regarding claims 2, 3, 9, 10, 18 and 19, Smith discloses the method wherein the client data comprises Fiber Channel signals and gigabit Ethernet signals (page 2, 0033-0035).

Regarding claims 4, 11 and 20, Smith discloses the method wherein the receiving step further comprises: initially negotiating with the remote transport interface for the total amount of space in the buffer reserved for GFP-encapsulated client data frames received from the local transport interface (page 8, 0144-0156).

Regarding claim 15, Smith discloses the transport interface wherein the at least on integrated circuit is selected from a group comprising ASICs and FPGAs (0234).

Regarding claim 16, Smith in view of Ghose discloses all the claim limitations as stated above, except for a processor that configured by software code stored in the memory subsystem.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use software-based machines. The benefit using software code device is

that programs can be changed and upgraded and new futures are added easily than hardware changes.

7. Claims 5, 6, 12, 13, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Ghose et al. as applied to claims 1, 8 and 17 above, and further in view of Tate et al. (US 2003/0185223).

Smith in view of Ghose discloses all the claim limitations as stated above. Further, Smith discloses a frame oriented client signal such as a Fiber Channel or Ethernet signal. According to the IEEE standard 802.1Q Ethernet frames are tagged. However, Smith does not expressly disclose sending/receiving an identification tag for each of the GFP-encapsulated client data frames.

Tate teaches a GFP encapsulation scheme to a provider device being arranged for exchanging tagged frames with a bridge having at least two Ethernet interfaces (0031-0037).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teaching from Tate of exchanging tagged frames to the system disclosed by Smith in view of Ghose. The suggestion/motivation for doing so would have been that Smith discloses a frame oriented client signal such as a Fiber Channel or Ethernet signal, therefore combing the identification tag with a frame oriented client signal would allow a particular Ethernet interface to be informed of a failure on a corresponding service unit port (0029).

8. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Ghose as applied to claims 1 and 8 above, and further in view of Kirchner et al. (US 5,745,685).

Smith in view of Ghose discloses all the claim limitations as stated above. Further, Smith discloses, in Fig. 2A, that class 2 signals are acknowledged by the responder port sending back and ACK frame, which is class 2 service uses both buffer-to-buffer flow control and end-to-end flow control. However, smith in view of Ghose does not expressly disclose a timer at the local port to provide a time limit to check for loss of GFP-encapsulated client data frames across the transport network. Using a timer at a transmitter side is well known technique.

Kirchner teaches that a timer may be used to determine the length of time to wait for acknowledgment (column 8, lines 52-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a timer, such as that suggested by Kirchner, to the transmitter port of Smith in view of Ghose in order to provide a reliable and efficient way of confirming that a message sent by the transmitter to the receiver has been received and a way to automatically initiate resending the message as needed (see Kirchner column 2, lines 11-15).

9. Claims 7, 14 and 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. in view of Ghose et al. further in view of Tate et al. as applied to claims 5, 12 and 21 above, and further in view of Kirchner et al.

Smith in view of Ghose further in view of Tate discloses all the claim limitations as stated above, except means for determining whether the identification tag has been received from the remote transport interface within a predetermined amount of time.

Kirchner teaches that a timer may be used to determine the length of time to wait for acknowledgment (column 8, lines 52-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a timer, such as that suggested by Kirchner, to the transmitter port of Smith in view of Ghose further in view of Tate in order to provide a reliable and efficient way of confirming that a message sent by the transmitter to the receiver has been received and a way to automatically initiate resending the message as needed (see Kirchner column 2, lines 11-15).

Response to Arguments

10. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

11. Applicant argues (Remarks; page 9-13) that the Smith and Ghose references where improper because there is no motivation to make such combination. Specifically, the Applicant does not see in the Smith application any reference to a problem or dissatisfaction with using frame counts for buffer flow control. However, the motivation for combining two elements does not have to originate the reference itself. Furthermore, The Ghose reference clearly teaches that some obvious variations would be to use a different measure for the credits where each credit

measure corresponds to multiples or submultiples of bytes. Credits do not have to represent single bytes but can represent multiple bytes and even packets (0153).

12. Applicant, further, arguers that the Ghose application teaches a flow control mechanism using buffer **credits based on bytes**, but not in the manner of what the applicants claim. Ghose flow control mechanism uses byte ranges, not the number of bytes. Examiner respectfully disagrees. Ghose reference clearly teaches a flow control mechanism using buffer credits based on number of **bytes or packets** between a sender and a receiver (the amount of credit held in **bytes by the sender are decremented by the amount of bytes sent**). The sender can transmit freely all bytes corresponding to the credits it has on hand without any need to check for acknowledgements when a sufficient amount of credits are available (see 0055, 0059, 0153-0154).

13. Applicant, further, argues that "why the Examiner to cite only part of Ghose flow control system, i.e., the buffer-to-buffer credit mechanism, against the applicants' claims". Examiner respectfully submitted that the rejection is base the combined teaching of Smith and Ghose reference, the Smith reference discloses buffer-to buffer flow control mechanism of client signal to automatically regulate the data throughput **to ensure no data can be lost**. Ghose reference is used only to show **how bytes** are used for implementing flow control over a packet oriented transmission network. As pointed out above, the Ghose reference teaches flow control mechanism using buffer credits based on number of bytes. Furthermore, Ghose suggests that **credits do not have to represent single bytes but can represent multiple bytes and even packets. Any method that consumes credits when the sender transmits bytes is represented in this invention (0153-0154).**

14. Further, Applicant cited the portion of specification which is the last paragraph on page 12 and continuing on to page 13 of the applicants' specification that describes "the retransmission and replacement of **lost** frames is handled by higher level network protocols". However, this paragraph contradicts with the claim limitation, which is "without consideration of loss or corruption".

15. Applicant argues that why a person using a Smith network system with a SONET/SDH transmission network interconnecting Fiber Channel protocol networks would use the Teachings of the Ghose TCP network remains unexplained. Smith and Ghose teach a packet oriented protocols using buffer-to-buffer flow control mechanisms. Smith suggests that other packet-oriented protocols using buffer-to-buffer flow control mechanisms, which are implemented in a manner similar to the invention, may be used (0230). Furthermore, Ghose suggest that the invention is not limited to TCP but includes Ethernet, Gigabit Ethernet, ATM, Fiber Channel and all varieties of wireless networks (0071).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST
November 23, 2005

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